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EXAMINER
MATTIS, JASON E

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>29 March 2004</u>.

2a)☐ This action is **FINAL**.　　2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20,23-32 and 34-41* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20, 23-32, and 34-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
　　　　application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

1.   This action is in response to Applicants' Pre-Amendment B filed on 3/29/04.

Claims 1-20, 23-32, and 34-41 are currently pending in the application.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

3.   Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention.

Lines 6-7 of claim 1 state, "when the current connection has a higher priority than

the conflicting connection, keeping the current connection while the priority

determination is made". The quoted limitation makes it appear that the current

connection is kept while the priority determination is made only when the current

connection has a higher priority that the conflicting connection. Since a priority

determination must be made before it in order to determine that the current connection

has a higher priority than the conflicting connection, it would be impossible to keep the

current connection while the priority determination is made only when the current

connection has a higher priority that the conflicting connection because the system

would not know if which connection has a higher priority until the priority determination

is made. It is recommended that the above quoted portion of claim 1 be rewritten to more accurately state that the current connection is kept while the priority determination is made, and then, when the current connection is determined to have a higher priority that the conflicting connection, leaving the current connection, which was kept during the priority determination, in place.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 1, 3, 4, 9, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Olnowich et al. (U.S. Pat. 5680402).

With respect to claim 1, Olnowich et al. discloses a method in a switch for avoiding a deadlock while a connection is being established through the switch **(See the abstract and column 17 lines 28-34 of Olnowich et al. for reference to circuitry detecting and correction different types of deadlock conditions automatically in a dual priority switching apparatus).** Olnowich et al. also discloses receiving data at a port, the data indicating that the port is to be part of a conflicting connection established through the switch **(See column 21 lines 44-54 of Olnowich et al. for reference to after detecting that a deadlock has occurred sending a correction signal, which**

indicates that a port of a switch is part of a conflicting connection). Olnowich et al.

further discloses when the port is already part of a current connection that is being

established, when the current connection has a higher priority than the conflicting

connection, keeping the current connection while the priority determination is made

(See column 21 lines 53-56 and column 20 lines 10-12 of Olnowich et al. for

reference to the correction occurring without terminating or changing any other

connections and at the same time holding the current connection at the switch,

while the priority is determined). Olnowich et al. also disclose that when the current

connection does not have a higher priority than the conflicting connection, establishing

the part of the conflicting connection through the port **(See column 21 lines 21-39 and**

column 23 lines 56-67 of Olnowich et al. for reference to an example of a deadlock

situation occurring and for reference to the deadlock being resolved by making

priority consistent across all the deadlocked ports of the deadlocked switches,

meaning that the higher priority connection is connected through the port and if

the conflicting connection has higher priority, it is the connection established).

With respect to claim 3, Olnowich et al. discloses that when the current

connection has the same priority as the conflicting connection, using an identifier of the

switch and device that sent the data as a priority tiebreaker **(See column 6 lines 9-48**

and column 23 lines 56-67 of Olnowich et al. for reference to the priority of the

connections in the system and method of Olnowich et al. being based on priority

levels of a switch, and for reference to the deadlock being resolved by making

priority consistent across all the deadlocked ports of the deadlocked switches

meaning that the deadlock is broken based on the new assigned consistent
priority of switch that sent the data).

With respect to claim 4, Olnowich et al. discloses establishing part of the
conflicting connection through the port includes sending data through the partially built
current connection indicating that the current connection cannot be established **(See
column 21 lines 44-54 of Olnowich et al. for reference to after detecting that a
deadlock has occurred sending a correction signal to the deadlocked switch,
which indicates that a port of a switch is part of a conflicting connection).**

With respect to claim 9, Olnowich et al. discloses a device comprising a
component that establishes and existing connection through a port **(See column 21
lines 21-39 and Figure 11 of Olnowich et al. for reference to switch devices 10A-
10H, which have nodes, which are ports, through which connections are
established and for reference to connections being establish by nodes 7 and 15
of switches 10B and 10D respectively).** Olnowich et al. also discloses a component
that receives a communications at the port, the communication indicating that the port is
to be part of a conflicting connection established through the device **(See column 21
lines 44-54 of Olnowich et al. for reference to after detecting that a deadlock has
occurred sending from a port of a switch that sent the data to a port of a switch
that is involved in the deadlock a correction signal, which indicates that a port of
a switch is part of a conflicting connection).** Olnowich et al. further discloses a
component that maintains the existing connection when the existing connection has a
higher priority than the conflicting connection and terminates the existing connection

when the conflicting connection has a higher priority that the existing connection **(See column 21 lines 21-39 and column 23 lines 56-67 of Olnowich et al. for reference to an example of a deadlock situation occurring and for reference to the deadlock being resolved by making priority consistent across all the deadlocked ports of the deadlocked switches, meaning that the existing connection is maintained when it has higher priority and the existing connection is terminated so that the conflicting connection can be established when the conflicting connection has a higher priority)**. Olnowich et al. further discloses keeping the existing connection while the priority determination is made **(See column 21 lines 53-56 and column 20 lines 10-12 of Olnowich et al. for reference to the correction occurring without terminating or changing any other connections and at the same time holding the existing connection at the switch, while the priority is determined)**.

With respect to claim 11, Olnowich et al. discloses that when the existing connection has the same priority as the conflicting connection, an identifier of the device and another device that sent the communication is used as a priority tiebreaker **(See column 6 lines 9-48 and column 23 lines 56-67 of Olnowich et al. for reference to the priority of the connections in the system and method of Olnowich et al. being based on priority levels of a switch, and for reference to the deadlock being resolved by making priority consistent across all the deadlocked ports of the deadlocked switches meaning that the deadlock is broken based on the new assigned consistent priority of switch that sent the data)**.

With respect to claim 12, Olnowich et al. discloses a component that sends a communication through the existing connection indicating that the existing connection cannot be made **(See column 21 lines 44-54 of Olnowich et al. for reference to after detecting that a deadlock has occurred sending a correction signal to the deadlocked switch, which indicates that a port of a switch is part of a conflicting connection).**

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 2, 10, 20, 23, 24, 29, 32, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olnowich et al. in view of Yasuda et al. (U.S. Pat. 5892923).

With respect to claims 2 and 10, Olnowich et al. does not disclose that the priority of a connection is based on priority of data to be transmitted through the connection.

Yasuda et al., in the field of communications, discloses controlling routing connections using message priority, which can be interpreted to be data priority or communication priority **(See column 4 lines 8-17 of Yasuda et al. for reference to this method).** Using message priority to route data has the advantage of making sure

that high priority data and communications, for example, time sensitive data, such as voice or video data, is routed with a minimum of interruptions due to deadlock conditions.

It would have been obvious to one of ordinary skill in the art at the time of the invention, when presented with the work of Yasuda et al., to apply the use of data and communication priority, as suggested by Yasuda et al., to the deadlock resolution method and system of Olnowich, with the motivation being to make sure that high priority data and communications, for example, time sensitive data, such as voice or video data, is routed with a minimum of interruptions due to deadlock conditions.

With respect to claim 20, Olnowich et al. discloses a method in a routing device for avoiding a deadlock while a connection is being established through the routing device **(See the abstract and column 17 lines 28-34 of Olnowich et al. for reference to circuitry detecting and correction different types of deadlock conditions automatically in a dual priority switching apparatus, which is a routing device).** Olnowich et al. also discloses receiving a communication at the routing device, the communication indicating that the port is to be part of a conflicting connection established through the routing device **(See column 21 lines 44-54 of Olnowich et al. for reference to after detecting that a deadlock has occurred sending a correction signal, which indicates that a port of a switch is part of a conflicting connection).** Olnowich et al. further discloses when the routing device is already part of a current connection that is being established, terminating the current connection and establishing part of the new connection through the routing device, wherein the current

connection is terminated and the new connection is established when the new

connection has a higher priority **(See column 21 lines 21-39 and column 23 lines 56-**

67 of Olnowich et al. for reference to an example of a deadlock situation

occurring and for reference to the deadlock being resolved by making priority

consistent across all the deadlocked ports of the deadlocked switches, meaning

that the higher priority connection is connected through the port and if the new

conflicting connection has higher priority, the current connection is terminated

and the new conflicting connection is established through the port). Olnowich et

al. also discloses keeping the current connection while the priority determination is

made **(See column 21 lines 53-56 and column 20 lines 10-12 of Olnowich et al. for**

reference to the correction occurring without terminating or changing any other

connections and at the same time holding the current connection at the switch,

while the priority is determined). Olnowich et al. does not disclose that the priority of

a connection is based on the priority of the communications to be transmitted through

the connection.

Yasuda et al., in the field of communications, discloses controlling routing

connections using message priority, which can be interpreted to be data priority or

communication priority **(See column 4 lines 8-17 of Yasuda et al. for reference to**

this method). Using message priority to route data has the advantage of making sure

that high priority data and communications, for example, time sensitive data, such as

voice or video data, is routed with a minimum of interruptions due to deadlock

conditions.

It would have been obvious to one of ordinary skill in the art at the time of the invention, when presented with the work of Yasuda et al., to apply the use of data and communication priority, as suggested by Yasuda et al., to the deadlock resolution method and system of Olnowich, with the motivation being to make sure that high priority data and communications, for example, time sensitive data, such as voice or video data, is routed with a minimum of interruptions due to deadlock conditions.

With respect to claim 23, Olnowich et al. discloses when the current connection has the same priority as the new connection, using an identifier of the routing device and an other device that sent the communication as a priority tiebreaker **(See column 6 lines 9-48 and column 23 lines 56-67 of Olnowich et al. for reference to the priority of the connections in the system and method of Olnowich et al. being based on priority levels of a switch, and for reference to the deadlock being resolved by making priority consistent across all the deadlocked ports of the deadlocked switches meaning that the deadlock is broken based on the new assigned consistent priority of switch that sent the data).**

With respect to claim 24, Olnowich et al. discloses that establishing of the new connection includes sending communications through a partially built current connection indicating that the current connection cannot be established **(See column 21 lines 44-54 of Olnowich et al. for reference to after detecting that a deadlock has occurred sending a correction signal to the deadlocked switch, which indicates that a port of a switch is part of a conflicting connection).**

    With respect to claim 29, Olnowich et al. discloses that the routing device has

ports and a conflict occurs when the current connection and the new connection are to

use the same conflicting port **(See column 21 lines 21-39 of Olnowich et al. for**

reference to an example of a type of deadlock that occurs when both nodes 7 and

15, which are ports, try to secure connections using the same nodes, ports, of

switches 10E and 10G, and for reference to node 7 successfully securing the

connections to the nodes in switch 10G and node 15 successfully securing the

connections to the nodes in switch 10E, with both nodes 7 and 15 unable to

complete their connections resulting in a deadlock).

    With respect to claim 32, Olnowich et al. discloses a device comprising a

means for receiving a communication at a port, that port having an existing connection

that is partially built, with the communication indicating that the port is to be part of a

new connection **(See column 21 lines 44-54 of Olnowich et al. for reference to after**

detecting that a deadlock has occurred sending from a port of a switch that sent

the data to a port of a switch that is involved in the deadlock a correction signal,

which indicates that a port of a switch is part of a conflicting connection).

Olnowich et al. also discloses a means for maintaining the existing connection when the

existing connection has a higher priority than the new connection and a means for

terminating the existing connection when the new connection has a higher priority than

the existing connection **(See column 21 lines 21-39 and column 23 lines 56-67 of**

Olnowich et al. for reference to an example of a deadlock situation occurring and

for reference to the deadlock being resolved by making priority consistent across

all the deadlocked ports of the deadlocked switches, meaning that the higher priority connection is connected through the port, and if the existing connection has higher priority, maintaining the existing connection, and if the new conflicting connection has higher priority, the existing connection is terminated and the new conflicting connection is established through the port). Olnowich et al. also discloses keeping the existing connection while the priority determination is made **(See column 21 lines 53-56 and column 20 lines 10-12 of Olnowich et al. for reference to the correction occurring without terminating or changing any other connections and at the same time holding the current connection at the switch, while the priority is determined). Olnowich et al. does not disclose that the priority of a connection is based on the priority of the communications to be transmitted through the connection).**

Yasuda et al., in the field of communications, discloses controlling routing connections using message priority, which can be interpreted to be data priority or communication priority **(See column 4 lines 8-17 of Yasuda et al. for reference to this method).** Using message priority to route data has the advantage of making sure that high priority data and communications, for example, time sensitive data, such as voice or video data, is routed with a minimum of interruptions due to deadlock conditions.

It would have been obvious to one of ordinary skill in the art at the time of the invention, when presented with the work of Yasuda et al., to apply the use of data and communication priority, as suggested by Yasuda et al., to the deadlock resolution

method and system of Olnowich, with the motivation being to make sure that high priority data and communications, for example, time sensitive data, such as voice or video data, is routed with a minimum of interruptions due to deadlock conditions.

With respect to claim 34, Olnowich et al. discloses that when the existing connection has the same priority as the conflicting connection, an identifier of the device and another device that sent the communication is used as a priority tiebreaker **(See column 6 lines 9-48 and column 23 lines 56-67 of Olnowich et al. for reference to the priority of the connections in the system and method of Olnowich et al. being based on priority levels of a switch, and for reference to the deadlock being resolved by making priority consistent across all the deadlocked ports of the deadlocked switches meaning that the deadlock is broken based on the new assigned consistent priority of switch that sent the data).**

With respect to claim 35, Olnowich et al. discloses a means for sending a communication through the existing connection indicating that the existing connection cannot be established **(See column 21 lines 44-54 of Olnowich et al. for reference to after detecting that a deadlock has occurred sending a correction signal to the deadlocked switch, which indicates that a port of a switch is part of a conflicting connection).**

8.   Claims 5, 13, 25, 30, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olnowich et al. in view of Srinivasan et al. (U.S. Pat. 6304549).

With respect to claims 5, 13, 25, 30, and 36 Olnowich et al. does not discloses attempting to establish the connections, for example, the lower priority connection, through another equivalent port, or bridge.

Srinivasan et al., in the field of communications, discloses attempting a different route when a connection is unsuccessful **(See column 11 lines 29-39 of Srinivasan et al. for reference to attempting a different route)**. This method of attempting a different rout is equivalent to attempting to establish connections, for example, the lower priority connection, through another bridge. This method has the advantage of taking less time to route the data of the lower priority connection because, if a connection though a different route is used, the data can be transferred without having to wait until the data of the conflicting connection has finished being transferred.

It would have been obvious to one of ordinary skill in the art at the time of the inventions, when presented with the work of Srinivasan et al., to apply the method of attempting to find a different route for connections, as suggested by Srinivasan et al., to the deadlock resolution method and system of Olnowich et al., with the motivation being to take less time to route the data of the lower priority connection because, if a connection though a different route is used, the data can be transferred without having to wait until the data of the conflicting connection has finished being transferred.

9.   Claims 6, 14, 26, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olnowich et al. in view of Ogimoto et al. (U.S. Pat. 6032205).

With respect to claims 6, 14, 26, and 37, Olnowich et al. does not disclose that the data or communication is a start-of-connection frame.

Ogimoto et al., in the field of communications, discloses data being processed with a priority controller 113 through header decode circuits 109 and 111 in a switching environment based on leading words in the messages **(See column 8 lines 7-20 and items 109, 111, and 113 in Figure 2 of Ogimoto et al. for reference to data being processed based on leading words)**. The leading words of Ogimoto et al. initiate a transmission permit signal, which can be interpreted to be a start of connection frame. This method has the advantage of encoding routing and priority in the data so that connection paths can be requested and priorities can be determined.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Ogimoto et al., to apply the use of leading works, as suggested by Ogimoto et al., to the deadlock resolution method and system of Olnowich et al., with the motivation being to encode routing and priority in the data so that connection paths can be requested and priorities can be determined.

10.   Claims 7, 8, 15, 16, 27, 28, 38, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olnowich et al. in view of Latif et al. (U.S. Pat. 6400730).

With respect to claims 7, 8, 15, 16, 27, 28, 38, and 39, Olnowich et al. does not specifically disclose switches being Fibre Channel and InfiniBand compatible.

Latif et al., in the field of communications, discloses a switch comprising any combination of Fibre Channel and InfiniBand ports **(See column 4 lines 13-39 of Latif**

et al. for reference to the Fibre Channel and InfiniBand ports). Making the switch

Fibre Channel and InfiniBand compatible has the advantage of allowing the switch to

process data using the Fibre Channel standard and the InfiniBand standard.

It would have been obvious for one of ordinary skill in that art at the time of the

invention, when presented with the work of Latif et al., to apply a Fibre Channel and

InfiniBand compatible switch, as suggested by Latif et al., to the deadlock resolution

method and system of Olnowich et al., with the motivation being to allow the switching

system to process data using the Fibre Channel standard and the InfiniBand standard.

11.   Claims 17, 18, 19, 31, 40, and 41 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Olnowich et al. in view of Liew (U.S. Pat. 5327552).

With respect to claims 17, 18, 19, 31, 40, and 41, Olnowich et al. differs from

these claims in that Olnowich et al. does not specifically disclose that the device is a

routing device, switch, an interconnect fabric module, and node.

Liew, in the field of communications, discloses a method and device for

correcting routing errors, including a method for deadlock prevention, for use with a

routing device, a switch, an interconnect fabric module, and a node **(See column 1

lines 7-24 of Liew for reference to the use of a deadlock prevention method with a

routing device, a switch and a node).** Including a deadlock prevention method in a

routing device, a switch, an interconnect fabric module, and a node has the advantage

of applying the method to different types of switching networks, rather than just in the

specific device disclosed by Olnowich et al.

It would have been obvious for one of ordinary skill in that art at the time of the

invention, when presented with the work of Liew, to apply a routing device, a switch, an

interconnect fabric module, and a node, as suggested by Liew, to the deadlock

resolution method and system of Olnowich et al., with the motivation being to use the

deadlock resolution method and device in with different types of switching networks.

Response to Arguments

12.   Applicants argue that the claims have been amended to distinguish over the cited

prior art. In response, the main reference used in the previous rejections, Filgate (U.S.

Pat. 6292488) has been removed from the rejections. New reference Olnowich et al.,

which shows the additional claim limitations is now the main reference cited in the

rejections.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jason E Mattis whose telephone number is (703) 305-

8702. The examiner can normally be reached on M-F 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Huy Vu can be reached on (703) 308-6602. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

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Business Center (EBC) at 866-217-9197 (toll-free).

jem

STEVEN NGUYEN
PRIMARY EXAMINER